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Shmuel Sharir

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Shmuel Sharir

Tel-Aviv University

and

University of Western Ontario

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Abstract

The paper presents a model of short-run work choices by an individual (family) who determines his work effort according to a preset earnings target. Such a model is claimed to be applicable to the multiple jobholding phenomenon and its implications for that phenomenon are discussed. In particular, we consider the effects of variable monetary and nonmonetary rewards from jobs on multiple jobholding. Researchers might find the diagrammatic presentation of that model more useful than the conventional leisure-income diagram when dealing with questions involving mainly short-run work choices.

"...the standard of expenditures which commonly guides our efforts...is an ideal of consumption that lies just beyond our reach, or to reach which requires some strain."

[Thorstein Veblen, The Theory of the Leisure Class]

I. Introduction

Multiple jobholding (moonlighting) has been customarily discussed and explained in the literature using the conventional leisure-(real) income diagram (model). (See Perlman (1966), (1968), (1969), Bronfenbrenner and Mossin (1967), Sherman and Willett (1968), Jackson (1972), Carlsson and Robinson (1972), and Chinloy (1974).) The explanation of that phenomenon was basically that due to the standard workweek the individual is "underemployed" in his primary job at the given wage rate, and in the absence of overtime work opportunities in that job he wants to moonlight. That discussion was based (explicitly or implicitly) on the following assumptions: (1) Multiple jobholding is a short-run phenomenon. (2) Multiple jobholders have no discretion concerning hours of work on their primary job. (3) Nonmonetary rewards from prospective jobs are identical. (4) The wage rates do not vary with hours of work. (5) Allocation of time and consumption decisions are made simultaneously.

Perrella (1970, pp. 59-61) found a high turnover among multiple jobholders. Such a finding is compatible with the claim that multiple jobholding is a short-run phenomenon. There are, of course, those who take a second job as part of a long-run decision to increase the amount or change the nature of their human capital--"getting experience in a different occupation" in Perrella's (1970, pp. 58-9) study. But they are a minority among the multiple jobholders according to that study.

While the assumption that multiple jobholding is basically a short-run phenomenon seems to be appropriate, at least as a first approximation, we take an issue with the other assumptions of the leisure-income model on both theoretical and empirical grounds. We argue that they are either inappropriate or too restrictive. And we develop an alternative model of short-run work choices under an earnings target. This model allows for discretion concerning hours of work on the primary and secondary jobs; it permits variable nonmonetary and monetary rewards differentials among jobs; and it assumes a sequential decision-making procedure in which the allocation of time to work and leisure activities is made after the decisions concerning the consumption of goods ("standard of living") have already been made.

There is nothing new in the introduction of time spent in various jobs as different arguments of the utility function, and even the possibilities of variable wage rates and of an earnings target are not revolutionary.[1] But the implications of these possibilities for the multiple jobholding phenomenon have been largely ignored. While the traditional "underemployment" argument is still a possible reason for multiple jobholding, another possibility is that people simply prefer to moonlight.[2] Thus, the suggested model seems to provide better insights into the multiple jobholding phenomenon than does the traditional leisure-income model.

In the next section we discuss the assumptions of the traditional leisure-income model by examining theoretical and empirical considerations concerning the opportunities of and motivations for holding a second job. In Section III we present a model of short-run work choices under an earnings target. The diagrammatic presentation of that model and the introduction of some additional relevant factors (e.g., institutional arrangements) are found in Section IV.

In Section V we provide some comparative statics implications for work choices and multiple jobholding. Concluding remarks are contained in Section VI.

II. Opportunities and Motivations for Multiple Jobholding

(i) Discretion over Hours of Work

If workers were both price and quantity takers, as was suggested by Chinloy (1974, p. 2), they might still have discretion over their hours of work even as single jobholders. This occurs when prospective employers (in the various industries and sectors) do not require the same number of hours of work, a possibility which is not a remote one.

Obviously, the above argument applies to the primary job of multiple jobholders as well. Some observations could be cited to support it. First, 25% of all multiple jobholders in the U.S. in the last decade had two part-time jobs. The percentage in May 1971 was 19% for males and 50% for females (Hayghe and Michelotti (1972, p. 40)). The (overall) figure for Canada in 1961 was 15% (Tandan (1972, p. 51). It seems unlikely that many of them were frustrated in not finding a full-time job. Most of them probably found that holding two part-time jobs was more suitable to their way of life. In the case of females, this is no surprise. Second, about 5% of all multiple jobholders in the U.S. in the last decade were self-employed and worked full-time on their primary job (e.g., Hayghe and Michelotti (1972, pp. 41, A-22)). As self-employed, mainly in agriculture, they could probably employ themselves "overtime," but for some reasons--income stability considerations, a higher wage rate on the secondary job, etc.--they preferred to have a paid secondary job.

Moreover, if in keeping with the current literature, we broaden our definition of the decision unit to the family, we find that at least one-third of these units (families) are multiple jobholders (both the husband and the wife are working). It seems unreasonable to argue that many of them are forced to

work due to their husband's "underemployment." Research on married women's labor force participation rate by Mincer (1962) and others lends considerable support to this view.

(ii) Variable Nonmonetary Rewards

The assumption that nonmonetary rewards are identical for all prospective jobs is at variance with the facts.[3] One of our most important explanations for the existence of wage differentials is the differences in nonmonetary rewards among jobs. That at least some multiple jobholding is due to nonmonetary rewards of the secondary job is obvious from Perrella's (1970, pp. 58-59) study. But what is important for our purposes is the possibility that nonmonetary reward differentials might change with the time spent in various jobs..

(iii) Variable Monetary Rewards

Casual observations suggest that for most paid workers, the wage rate does not decline with hours of work. But in the case of self-employed, one expects the wage rate (= marginal productivity) to decline, at least from a certain number of hours of work. Since more than a third of the multiple jobholders in the U.S. (e.g., Hayghe and Michelotti (1972, pp. 40-41)) and half of those in Canada (Tandan (1972, p. 47)) are self-employed on one job, variable (declining) wage rates might be an important reason for multiple jobholding.

(iv) Sequential Decision-Making and an Earnings Target

Studies by Wilensky (1963), Mott (1965, pp. 80-83), Katona (1964, pp. 113-15), and Perrella (1970, pp. 57-59) for the U.S. and by Freedman (1972, pp. 255-56) for Taiwan suggest that multiple jobholders were motivated by "financial pressures" and "consumption aspirations greatly exceeding economic rewards." These motivations seem to imply that the individual has some notion of how much he should earn, so that the decision-making is sequential rather than simultaneous.[4] We, therefore, view these people as facing a <u>short-run</u>

problem of "financing" a predetermined stream of expenditures. "Funds" could be obtained by borrowing, by using nonwage income and the available wealth, and by reducing the consumption of less desired goods. But we will assume that all these sources are no longer feasible either because they have already been exhausted or because their price (in the short run) is regarded as too high. Increasing work efforts is then the only solution in the short run. In that case, the individual's (or family's) problem becomes that of minimizing work effort or "pain," while achieving the earnings target.

The assumption that an earnings target motivates short-run work choices is likely to be relevant for many people (even if they are not multiple jobholders). The capital market is imperfect and individuals (families) have only a limited access to it. Nonwage income and accumulated wealth are usually small compared to the stream of expenditures and wealth might be held in illiquid forms.[5] Moreover, people will typically avoid as much as possible using dissaving as a source of "financing" the current stream of expenditures due to the uncertainty concerning future conditions. The stream of expenditures itself is largely given in the short run for several reasons: First, it has already been suggested by Veblen (1953, especially Ch. 5), Hicks (1964, p. 98) and Duesenberry (1962, pp. 28-32) that one's desired standard of living is affected (determined) to a large extent by social standards and habits. The phrase "keep up with the Joneses" is a well-known popularization of that point.[6] Second, the permanent income hypothesis, which is well established in economic theory, might be interpreted to imply that people prefer a constant flow of consumption to a fluctuating one. Even though the earning power has changed, the desired standard of living remains unchanged, at least in the short run. Third, previous consumption decisions determine current (consumption) expenditures via two channels. To the extent that they were financed in the past by loans, there is now a given flow of payments (instalments) that must be met. The

importance of this method of buying (durable and nondurable) goods, as well as services (fly now, pay later) has increased over time (see Klein (1971, pp. 14-15)). In addition, previous purchases of durable goods might impose a flow of "operating costs" (e.g., property taxes) in the current period as well. These costs could be avoided only at a price, and if that price is high enough, people will not make adjustments, i.e., they will follow a pattern of expenditures imposed on them by their previous decisions.

In addition to the above arguments, one could refer to the psychological theory of household behavior advanced by Katona (e.g., 1964, especially pp. 300-301) and his associates. This theory suggests that short-run work efforts (income) might be a function of the predetermined consumption needs or wants. Previous accomplishments raised expectations and gave rise to new, yet unsatisfied, wants. Families will exert efforts to make more money to satisfy their new wants if they perceive that such advances are feasible. Thus, families are likely to have an earnings target which is reality-oriented. Multiple jobholding or a working wife are some of the ways by which income is claimed to be raised to meet those consumption aspirations (Katona (1964, p. 115)).

III. The Model

Let us assume, as is done in the leisure-income model, that there are only four goods: an aggregate leisure activity, an aggregate consumption good and two work activities. These assumptions cause little loss in generality[7] and allow us to use a diagrammatic presentation.

Denote by t_i the time spent in the i^{th} time activity, and by Y_i its (total) earnings. For the leisure activity--assumed to be the third one--we get by definition $Y_3 \equiv 0$. Earnings of any work activity (job) depend on the time spent in that work activity, t_i, and on the marginal monetary reward (= wage rate) obtained for each such unit of time. The latter might depend

on the time spent in that work activity. For example, the marginal monetary reward is likely to decline with hours of work in that activity if there is a diminishing marginal productivity. For the self-employed this occurs as a matter of definition. In addition, the marginal monetary reward of any work activity might be affected by the time spent in the other work activity. For example, it might increase fatigue, reduce the marginal productivity and possibly the marginal monetary reward in the first work activity. Thus, earnings of both work activities might be a function of total hours of work as well as of their allocation between the two activities. Total earnings from both work activities will be written in the most general form as $Y = Y(t_1,t_2)$.

The individual is assumed to maximize his utility over the three time activities and the aggregate consumption good subject to the conventional money income and time constraints as well as the fixed (real) consumption expenditure constraint. For the purpose of our problem we find it worthwhile, however, to write the maximization problem a little differently. Using the time constraint ($t_3 = T^o - t_1 - t_2$) to eliminate the leisure activity, t_3, the individual's short-run problem becomes that of maximizing his utility

$$(1) \qquad V(t_1,t_2;\ X^o,T^o) \equiv U(t_1,t_2,T^o - t_1 - t_2;\ X^o)$$

subject to the earnings target and work time constraints, (2) and (3) respectively,

$$(2) \qquad Y(t_1,t_2) \geqq PX^o - A^o$$

$$(3) \qquad t_1 + t_2 \leqq T^o$$

as well as, the usual non-negativity constraints $t_1,t_2 \geqq 0$. X^o is the desired amount of the composite consumption good, P is its price index, A^o is nonwage income and T^o is total time available for either work or leisure activities.[8]

The Kuhn-Tucker conditions for the problem are:

$$(4) \qquad \frac{\partial V}{\partial t_i} + \frac{\partial Y}{\partial t_i} + \mu \leqq 0 \qquad i=1,2$$

$$(5) \qquad t_i \left(\frac{\partial V}{\partial t_i} + \frac{\partial Y}{\partial t_i} + \mu \right) = 0 \qquad i=1,2$$

$$(6) \qquad Y(t_1, t_2) - PX^o + A \geqq 0$$

$$(7) \qquad \lambda \left(Y(t_1, t_2) - PX^o + A \right) = 0$$

$$(8) \qquad T^o - t_1 - t_2 \geqq 0$$

$$(9) \qquad \mu(T^o - t_1 - t_2) = 0$$

$$(10) \qquad t_1, t_2, \lambda, \mu \geqq 0$$

where λ is the marginal utility of money (nonwage income) and μ is the marginal utility of work time. These conditions are necessary and sufficient for maximum if the utility function (1) is concave and the constraints (2) and (3) are convex.[9]

Casual observations suggest that the work time constraint is not effective, i.e., people consume at least some leisure ($t_3 > 0$),[10] which implies from (9) that $\mu = 0$.

Turning to λ, consider first the case of $\lambda = 0$. If $t_i > 0$ we know from (5) that $\frac{\partial V}{\partial t_i} = 0$. From (1) it is obvious that $\frac{\partial V}{\partial t_i} = \frac{\partial U}{\partial t_i} - \frac{\partial U}{\partial t_3}$. Thus, time is spent in the i^{th} work activity until its marginal utility equals that of leisure. This is the case in which we work simply because we enjoy it (e.g., too much leisure time is boring). We do not have to work that much because the earnings target has been achieved already (see equation (7)). While such cases might arise, this seems to be an unimportant situation. For most people the monetary rewards of work are relevant (at the margin), and clearly this is the case for moonlighters who are under "financial pressures."

We shall, therefore, assume below that $\lambda > 0$. Such an assumption means (from (7)) that work efforts are determined by the earnings target (the constraint is binding).

If $t_i > 0$ we know from (5) that $\frac{\partial V}{\partial t_i} = -\lambda \frac{\partial Y}{\partial t_i}$. It is not impossible for one of the work activities to have $\frac{\partial Y}{\partial t_i} \leq 0$; so much time is spent in that activity because it is at least as enjoyable (at the margin) as leisure, $\frac{\partial V}{\partial t_i} \geq 0$. But in that case the individual must be a multiple jobholder, and the marginal monetary reward for the other work activity will be positive, $\frac{\partial Y}{\partial t_j} > 0$.[11] Usually we do not observe $\frac{\partial Y}{\partial t_i} \leq 0$, so we assume that $\frac{\partial Y}{\partial t_i} > 0$ for both work activities. Using (4) we get $\frac{\partial V}{\partial t_i} \leq -\lambda \frac{\partial Y}{\partial t_i} < 0$. An increase in the time spent in any work activity decreases $V(t_1, t_2; X^o, T^o)$. The loss of utility due to work is the "pain" from work. And maximization of utility actually means the minimization of that "pain."

Dividing conditions (4) for the i^{th} work activity by that of the j^{th} one suggests, after rearrangement, that the individual will work in activity i if

$$(11) \qquad \frac{\partial V/\partial t_i}{\partial Y/\partial t_i} \geq \frac{\partial V/\partial t_j}{\partial Y/\partial t_j} \qquad i=1,\ j=2 \quad \text{or} \quad i=2,\ j=1$$

and if the individual is a multiple jobholder--i.e., works in activity j as well--the equality will hold. By allocating his work time to the various (work) activities in a way which equalizes the "pain" of earning the last dollar in all these activities, the individual minimizes total "pain" of earning the (given) needed sum of money.

In the leisure-income diagram one actually assumes that $\frac{\partial V}{\partial t_1} \equiv \frac{\partial V}{\partial t_2}$. In addition, it is also assumed that $\frac{\partial Y}{\partial t_i} = w_i$, where w_i is the fixed wage rate of the i^{th} activity. As long as $w_1 \neq w_2$ condition (11) implies that under the above assumptions the individual will specialize, i.e., will be a

single jobholder. In order to explain multiple jobholding one must resort to an institutional constraint on hours of work in one work activity. But once we allow either the subjective marginal rate of substitution between time spent in the two work activities or the objective one to vary, equation (11) suggests that multiple jobholding might occur in a world of free choice too.

IV. Diagrammatic Presentation and Institutional Considerations

It is useful to illustrate the maximization problem (1)-(3) in a diagram. First, from methodological point of view this will be our substitute for the leisure-income diagram whenever the emphasis of the discussion is on short-run work choices. Second, when dealing with multiple jobholding we shall be interested in the reasons for a change in the number and/or identity of the work activities chosen by the individual. The conventional mathematical tools to handle comparative static problems assume an internal solution and might, therefore, be inappropriate. In such a case the diagram will have an analytical value.

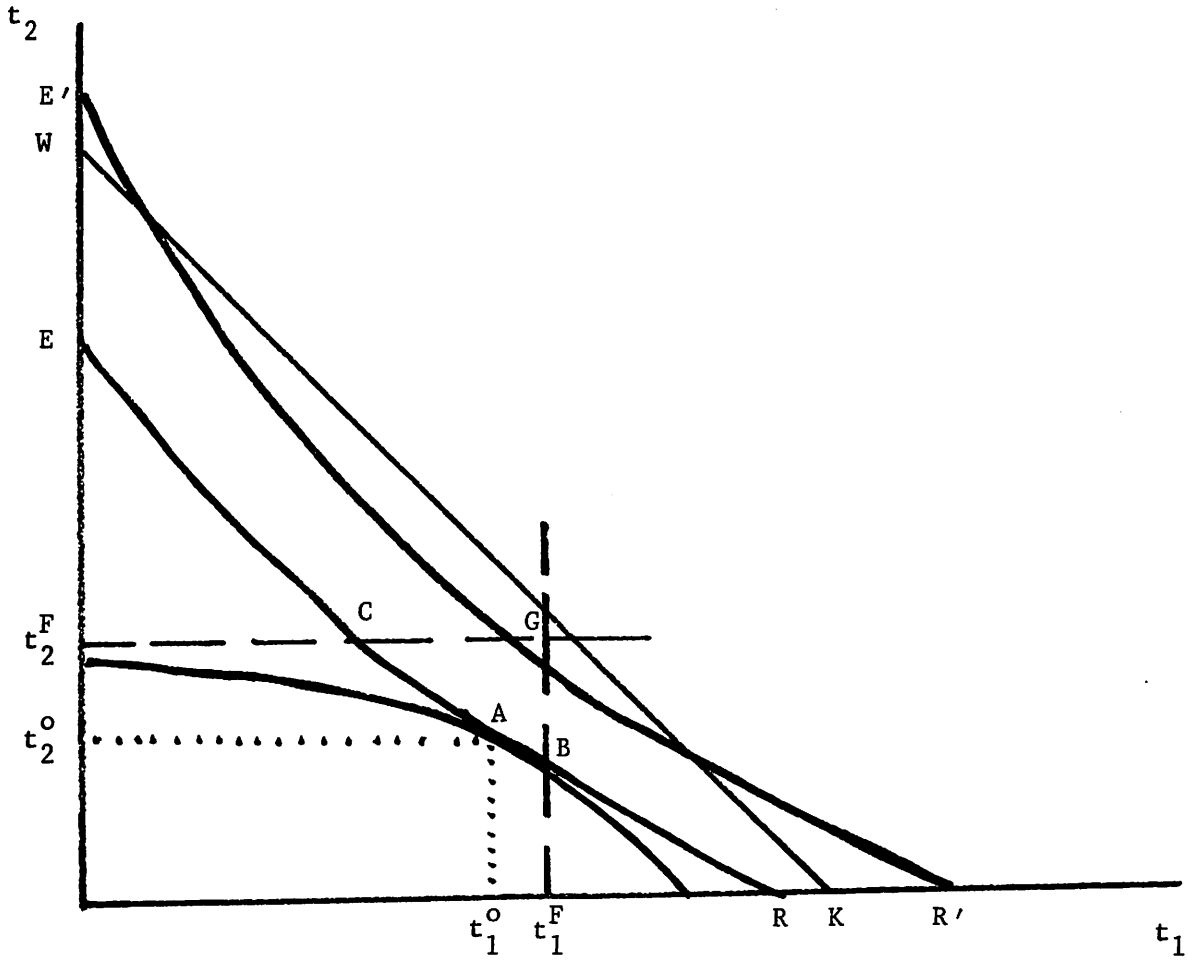
The maximization problem is presented in Figure 1 with the two decision variables, t_1 and t_2, on the axes. The indifference curve describes combinations of t_1 and t_2 which hold utility constant, with t_3 (leisure) varying according to the time constraint $t_3 = T^o - t_1 - t_2$. Since $\partial V/\partial t_i < 0$ its slope is negative,

$$\frac{dt_2}{dt_1} = - \frac{\partial V/\partial t_1}{\partial V/\partial t_2} < 0 \quad . \tag{12}$$

Taking the total derivative of (12) with respect to t_1 yields

$$\frac{d^2 t_2}{dt_1^2} = \left[- 1/ \left(\frac{\partial V}{\partial t_2} \right)^3 \right] \left[\frac{\partial^2 V}{\partial t_1^2} \left(\frac{\partial V}{\partial t_2} \right)^2 - 2 \frac{\partial^2 V}{\partial t_1 \partial t_2} \frac{\partial V}{\partial t_1} \frac{\partial V}{\partial t_2} + \frac{\partial^2 V}{\partial t_2^2} \left(\frac{\partial V}{\partial t_1} \right)^2 \right] \tag{13}$$

Figure 1: Utility Maximization Under An Earnings Target



and in general the sign of (13), or the exact shape of the indifference curve, is not known. If the marginal monetary rewards were constant, a sufficient condition for multiple jobholding would be a negative sign for (13), i.e., indifference curves which are concave from below. In that case the sign of the second square brackets in (13) is known to be negative from the (sufficient) second order condition of an internal solution to the problem,[12] and since $\frac{\partial V}{\partial t_2} < 0$ the sign of (13) is also negative. While concavity from below of the indifference curves is not a necessary condition for multiple jobholding--whether the marginal monetary rewards are constant or variable--it increases the chances of that situation to arise. We, therefore, assume in Figure 1 that the indifference curves are concave from below.

Turning to the work time constraint--line WK in Figure 1--it has a slope of - 1. The line is the locus of <u>maximum</u> combinations of time spent in work activities which conform to (3)--i.e., when $t_3 = 0$. Line ER, the earnings target line, is the locus of <u>minimum</u> combinations of t_1 and t_2 which yield at least the required earnings according to (2). Its slope is $-\frac{\partial Y}{\partial t_1}\Big/\frac{\partial Y}{\partial t_2} < 0$, but generally the exact shape of the line is not known. If the wage rate in both work activities were constant, it would have been linear with a slope equal to $-w_1/w_2$. If marginal monetary reward (= marginal productivity) declines in one work activity but is fixed in the other, it will be convex from below. Note that in the case in which utility depends on total hours of work but not on their allocation, the indifference curves become linear (with a slope of - 1) and for multiple jobholding to arise it is sufficient that the earnings target line be convex from below.[13] Since convexity from below of the earnings target line increases the chances that multiple jobholding will occur, we assume that shape in Figure 1.

If the maximization problem (1)-(3) does not suffer from an internal inconsistency, the feasible set is not empty. The feasible set in Figure 1 is the (convex) shaded area between the work time line and the earnings target line.

In the space of t_1 and t_2 (Figure 1), utility increases as we move toward the origin. Therefore, the solution to the individual's problem (1)-(3) is at A, where utility is maximized and the constraints are satisfied. The individual of Figure 1 prefers to be a multiple jobholder, spending t_1^o at work activity 1 and t_2^o at work activity 2. The assumptions of decreasing marginal utility and monetary reward for time spent in any work activity--which almost ensure the concavity from below of the indifference curve and convexity from below of the earnings target line, respectively--imply that by diversification of work time the individual is able to minimize the "pain", or loss of utility, from the work effort needed to "produce" a given earnings target.

If the individual's tastes with respect to the two work activities were more in favor of activity 2, or if the marginal monetary reward of that activity were relatively higher, the individual might have ended up in Figure 1 at E. And had he liked work activity 1 relatively more, or that activity would have paid relatively more at the margin, he might have ended up at R. In both cases he does not want to be a multiple jobholder.

In view of the plausibility of the assumptions of an earnings target in the short run, of decreasing marginal utility from time spent in any work activity and of diminishing marginal monetary reward for the self-employed, one may wonder why diversification in work activities--i.e., multiple jobholding--is not a widespread phenomenon (only about 5% of people employed in the U.S. are multiple jobholders). Several reasons might account for that. First, the

data pertain to people who are actually multiple jobholders rather than those who want to be. Second, sometimes the wage rate increases with the time spent on the job. The evidence seems to suggest that the wage rate is higher for full-time than for part-time workers (e.g., Oaxaca (1973, p. 136)). Many workers get premium pay for "overtime" (e.g., Tandan (1972, pp. 37-8)). Such situations increase the attractiveness of spending all work time in one activity. Third, variety in work activities usually imposes some (additional) costs on the individual, e.g., search and transportation costs (in terms of money or time). Such costs might deter some people from becoming multiple jobholders. Fourth, due to fixed (set up) costs in hiring or production, employers might require the individual to spend at least some minimum number of hours on the job. This also discourages multiple jobholding. For the sake of brevity we will show below the effect of the last factor only.[14]

Assume that in Figure 1 Ot_1^F and Ot_2^F denote full-time schedules in the respective work activities. The individual wants to be at A, and to work at two part-time jobs rather than in one full-time job. If both jobs had required that at least a full-time schedule were worked, point A would no longer have been attainable. The boundary of the feasible set would have included in that case only three points: E and R (both on line ER) and (probably) point G (where the two full-time schedule requirements are met). In E he works only in activity 2 and in R only in activity 1, while in G he is moonlighting by working full-time in both activities. The individual will choose that point through which the lowest indifference curve passes. If at least some of those who liked to be at A without the (new) restrictions would have ended up at E or R, the multiple jobholding rate decreases due to the imposition of minimum schedule restrictions.

Suppose now that overtime is not available in activity 2, so that Ot_2^F becomes a maximum constraint. Let us also assume that one is free to choose his work schedule in activity 1. The boundary of the feasible set now becomes CR. All those who would have liked to be on EC will choose, given the shape of the indifference map, point C. These people are "underemployed" in their primary job (activity 2), and therefore have to work more in the other activity. Moreover, the moonlighting rate among full-time workers in activity 2 increases, since those who would have liked to be at E (= no moonlighting) will end up at C (= moonlighting) as well. Assuming that without any constraint people would have been distributed uniformly along ER (and this depends on the dispersion of their tastes), the absence of overtime work in activity 2 will cause the moonlighting rate among people whose primary job is in that activity, i.e., spend most of their work time there, to be exceptionally high. The high moonlighting rate among schoolteachers and postal workers (perlman (1969, p. 41)) is usually explained in these terms.

V. Some Comparative Statics Considerations

Consider first the following changes: (1) an increase in the consumption aspirations, X (e.g., if the individual moved to a higher income neighborhood); (2) a decline in nonwage income, A; (3) an increase in the price index, P; (4) a decline in both marginal monetary rewards, $\frac{\partial Y}{\partial t_1}$ and $\frac{\partial Y}{\partial t_2}$, by the same rate. As a result of these changes, the earnings target line moves upward. Suppose it becomes $E'R'$ in Figure 1. While in general there is no necessary relationship between the shapes of the original and new earnings target lines, we shall assume that $Y(t_1,t_2)$ is homogeneous in t_1 and t_2. This assumption would always be fulfilled if the marginal monetary rewards were constant, as in the case of fixed wage rates. In that case the two (linear) earnings target lines would have been parallel.[15]

Multiple jobholding might be affected via two channels. First, the increase in the earnings target might exclude from the feasible set the possibility of single jobholding in one or both activities. In Figure 1 the latter occurs. But if the earnings target lines were linear, single jobholding might be excluded from the feasible set for one activity only. In either case, however, the increased earnings target might increase the multiple jobholding rate. Some people who did not moonlight before might be forced to do so now if they want to meet the higher earnings target with the limited time available for work purposes.

Second, the higher earnings target will increase total work effort ("pain"): either total hours of work or the share of time spent in the high-paying (at the margin) work activity (or both) will increase.[16] In general, the effect on the multiple jobholding rate is not clear. But once we introduce any of the restrictions on choice considered in section IV, the increase in the earnings target is likely to increase the multiple jobholding rate. Due to fixed costs (to the individual or the employer) employers might require, and individuals might want, to spend at least some minimum number of hours in an activity if they work there. If the desired number of hours of work increased when the earnings target increased, there would be an increase in the probability that the amount of time the individual would like to spend in <u>each</u> of the two work activities is larger than the minimum required. This will tend to raise the multiple jobholding rate. A similar result is obtained if the primary job does not offer (additional) overtime work opportunities. Meeting the higher earnings target will force the individual to moonlight.

The discussion suggests the following phenomena:

1. Higher consumption aspirations (or earnings target) when nonwage income and wage rates are unchanged cause a financial problem for the individual. Consequently, the probability that he will be a moonlighter increases. This can explain the positive relationship between moonlighting and the purchase of a home or plans to purchase some "luxury" goods (Wilensky (1963, p. 111)), as well as the high moonlighting rate of married men (Mott (1965, p. 83)) and of men with large families (Perrella (1970, p. 60)).

2. Consumption aspirations, goods' prices, wage rates and nonwage income tend to increase over time. These factors affect the earnings target line and, therefore, multiple jobholding in the opposite direction. As a result, the multiple jobholding rate might reveal no trend. The relative constancy of the multiple jobholding rate in the U.S. around the 5% figure with no apparent trend--its range during the period 1956 to 1973 was 4.5% to 5.7% with the lowest rate in December 1959 and the highest in May 1963--might be a direct result of these opposing forces.

3. In an inflationary situation, given fixed consumption aspirations, the earnings target line will increase (decrease) if wage rate changes lag behind (lead) price changes. Our previous discussion suggests that in such a case there will be an increase (decrease) in the multiple jobholding rate. Moreover, if people do not anticipate the intensification (weakening) of the inflationary process we shall expect a positive (negative) relationship between the multiple jobholding rate and the rate of increase in prices. Also, to the extent that some expenditures are fixed in <u>nominal</u> terms, e.g., mortgage payments, the earnings target will decline on that account as long as wage rates increase during the inflation. And this will reduce the multiple jobholding rate.

Turning to a solitary wage change in, say, activity 1 we note that it has two effects. First, it reduces the earnings target line, and following the previous discussion, it is expected to reduce multiple jobholding. Second, it causes the earnings target line to be steeper. Activity 1 becomes relatively more attractive. Some of those who worked only in activity 2 might begin to moonlight, but some moonlighters might decide to work only in activity 1. The relative marginal monetary reward effect on the multiple jobholding rate is, therefore, unpredictable. Only if it were nil would we have ended up with the prediction of a lower multiple jobholding rate. Note that if the above wage increase is small enough, then, given the shape of the indifference map, no one will change his primary job. In that case the discussion above will suggest that the multiple jobholding rate for those whose primary job is in activity 2 might increase, and that it certainly decreases for those whose primary job is in activity 1 (the wage rate of which has increased).[17]

VI. Concluding Remarks

The paper presents a model of short-run work choices. It allows nonmonetary and monetary rewards to vary with hours of work in the various jobs, but it assumes that the stream of (consumption) expenditures is given. The plausibility of such a model has been discussed, and there seems to be considerable theoretical and empirical arguments in its support. Within such a framework multiple jobholding might be the result of one's choice rather than being due to his "underemployment" in a given job. ("Underemployment" contributes to that phenomenon once we introduce institutional arrangements). The model explains that monetary or utility considerations might cause people to prefer working in two part-time jobs rather than in a full-time job; or to prefer spending most (some) of their work time in a lower paying but more enjoyable job, and to "supplement" their earnings

by taking a part-time (full-time) job which is a higher paying but less enjoyable one. This implies, by the way, that even in the absence of any costs from multiple jobholding, there is no basis for the frequent claim that the wage rate will be higher for any individual on the primary job than on the secondary one. Also, since diminishing marginal monetary rewards are more likely to occur for self-employed, the model helps to explain why the multiple jobholding rate is higher for self-employed than for paid workers (on the primary job).

The diagrammatic presentation of the model is probably the most novel aspect of the paper from a methodological point of view. Researchers might find such a diagram more useful than the leisure-income diagram when dealing with short-run work choices. Even if an earnings target were an inaccurate description of the "real world," it might pay to make that assumption since it allows us to incorporate the possibility of nonmonetary reward differentials among work activities, and to <u>still</u> be able to draw a simple diagram as an analytical tool.

The model presented in this paper could be used to analyze the effects of income maintenance programs, shortening of the standard work week, wage increases in a primary job with a fixed, standard work week, and (with some additional complication of the model) the effect of a change in the availability and price of credit on short-run work choices. The discussion of these possibilities will follow the reasoning of section V.

The results of the model seem to be similar to what would have been obtained from a general model of utility maximization such as Becker's (1965). This is not surprising in view of the fact that in both models a given amount of earnings is "produced" in a way which minimizes the "pain" from work. The only difference between them is that the amount of earnings is fixed in the

present (short-run) model but variable in the general (presumably long-run) model. The only important difference in the results is that the model presented here establishes a positive relationship between "financial pressures" and multiple jobholding, while it seems that within the classical model one will not be able to do so. But this might be due to the static nature of the model. Once a dynamic model is considered, the two models might "converge" to the same model. The need for such a dynamic model seems to be clear. It will allow one to analyze other sources of "financing" a given consumption aspiration level (e.g., borrowing), and to relate such aspirations to "successes" in the labor and capital markets as is suggested by the psychological theory of household behavior.

FOOTNOTES

[1]The idea of an earnings target was suggested by Veblen (1953, p. 81) long ago. More recently, Mack (1956) suggested that the traditional consumption-income relationship on the household's level should be reversed. Moreover, it was used to explain backward-bending supply of labor (Vatter (1961)), as well as, the "added worker" hypothesis of the effect of business cycles on labor force participation of married women (Mincer (1962, pp. 74-5)). It also appeared in Winch's (1971, especially pp. 23-24) discussion of the welfare meaning of GNP. A semi-earnings target appeared in Carlsson, Robinson and Su's (1970) discussion of short-run consumer behavior, in Carlsson and Robinson's (1971) discussion of inflation and multiple jobholding, and in Barzel and McDonald's (1973) discussion of labor supply.

[2]Note that the traditional "underemployment" argument could be viewed as a special case of our variable (declining) wage rate argument. The wage rate is positive for "standard time" but is zero for "overtime".

[3]The shortcoming of the leisure-income diagram which resulted from that assumption was recognized by Bronfenbrenner and Mossin (1967, p. 324) and Perlman (1969, p. 39n).

[4]It seems that the classical leisure-income model cannot generate such feelings. The utility function describes "wants", but "consumption aspirations" must be something else since they are reality-oriented in all the quoted studies. Even an attempt to relate "consumption aspirations" or "financial pressures" to the marginal rate of substitution between consumption (income) and leisure seems inappropriate, because those feelings are concerning the <u>level</u> of income and consumption rather than its trade-off with leisure.

[5]The last point was suggested by Gary Grant.

[6]This view draws some support from sociological theories and findings. See, for example, Burk (1968, pp. 71-7), Willmott and Young (1960, pp. 111-13 and 132), and Duesenberry (1962, pp. 48-50).

[7]Aggregation of leisure activities or market goods means that we ignore the effects of their allocation to the various consumption activities on the allocation of time to work activities. Such effects are probably of a secondary importance. The limitation of the number of work activities to two is not inappropriate for most people, and generalization of the discussion to the n activities case is straightforward.

[8]If the model were to apply to the family, t_1 would have been the husband's work time and t_2 the wife's work time. Instead of (3) we would have two work time constraints $t_i \leq T_i^o$ (i=1,2). The discussion below would have followed with almost no change.

[9]See the next section for further discussion of this point.

[10]From a mathematical point of view this is ensured by assuming that $U(t_1,t_2,0; X^o) = -\infty$ and that marginal utility of leisure (t_3) approaches infinity when its quantity approaches zero.

[11]If the individual were not a multiple jobholder or if $\frac{\partial Y}{\partial t_j} \leq 0$, we would have actually been back in the case in which the earnings target was achieved with less hours of work, i.e., $\lambda = 0$. But this would have contradicted the assumption in the text that $\lambda > 0$.

[12]The sufficient second-order condition for an internal solution of the problem (1)-(3) is that its bordered Hessian determinant be positive. Developing that determinant after substituting from (4) $\frac{\partial Y}{\partial t_i} = -\frac{1}{\lambda}\frac{\partial V}{\partial t_i}$ we get

$$D = -\frac{1}{\lambda^2}\left[\frac{\partial^2 V}{\partial t_1^2}\left(\frac{\partial V}{\partial t_2}\right)^2 - 2\frac{\partial^2 V}{\partial t_1 \partial t_2}\frac{\partial V}{\partial t_1}\frac{\partial V}{\partial t_2} + \frac{\partial^2 V}{\partial t_2^2}\left(\frac{\partial V}{\partial t_2}\right)^2\right]$$

$$-\lambda\left[\frac{\partial^2 Y}{\partial t_1^2}\left(\frac{\partial Y}{\partial t_2}\right)^2 - 2\frac{\partial^2 Y}{\partial t_1 \partial t_2}\frac{\partial Y}{\partial t_1}\frac{\partial Y}{\partial t_2} + \frac{\partial^2 Y}{\partial t_2^2}\left(\frac{\partial Y}{\partial t_1}\right)^2\right] > 0.$$

If the marginal monetary rewards are constant the second square brackets equals zero. And since $\lambda > 0$, the sign of the first square brackets (which appear in equation (13)) is negative.

[13]If $V(t_1+t_2;\ X^o,T^o)$ we get $\frac{\partial V}{\partial t_1} = \frac{\partial V}{\partial t_2}$ and $\frac{\partial^2 V}{\partial t_1^2} = \frac{\partial^2 V}{\partial t_2^2} = \frac{\partial^2 V}{\partial t_1 \partial t_2}$ and the first square brackets in footnote 12 equals zero. Since $\lambda > 0$ the sign of the second square brackets in footnote 12 will be negative. The shape of the earnings target line is determined by an equation similar to (13) with Y substituting for V. Since $\frac{\partial Y}{\partial t_2} > 0$, the negative sign of the terms in the square brackets of that equation implies $\frac{d^2 t_2}{dt_1^2} > 0$, or a convexity from below of the earnings target line.

[14]If the marginal monetary reward is constant for standard time and overtime but is higher for the latter the earnings target constraint becomes

(2') $(w_1\alpha_1)t_1 + (w_2\alpha_2)t_2 \geqq PX^o - A^o$

where $\alpha_i = 1$ if $t_i \leqq t_i^*$

$= a_1 > 1$ if $t_i > t_i^*$

and t_i^* is the full-time schedule. The earnings target line will be concave from below, and this discourages multiple jobholding.

The cost element of diversification implies an earnings target constraint

$$(2'') \quad Y(t_1,t_2) - \alpha_1(t_1) - \alpha_2(t_2) \geqq PX^o - A^o - \beta_1 R_1 - \beta_2 R_2$$

where α_i is the cost of working in the i^{th} work activity which is related to the time spent in that activity (e.g., the cost of a baby-sitter when needed). β_i are (fixed) costs not related to the time spent in the i^{th} activity (e.g., transportation costs, union membership fees, payment to the employment agency). $R_i = 1$ if $t_i > 0$, $R_i = 0$ if $t_i = 0$.

The fixed cost elements cause concavity from below in the earnings target line "on" the axes and, therefore, discourages multiple jobholding. Without further specification we cannot determine the effect of the variable costs on the shape of the line.

[15]Note that there is a difference between the change in consumption expenditures, X, and the other changes, since the former might also change the level of utility attached to the indifference curves, as well as, their slope (X^o is a parameter in the utility function (1)).

[16]If the slope of the earnings target line at A (in Figure 1) is smaller (larger) than unity, an increase in the share of time spent in activity 1, which is the lower (higher) paying one at the margin, must (might) be accompanied with an increase in hours of work. The reader could verify that point by drawing an iso-work time line through A.

[17]For the sake of brevity we do not discuss the effect of changes in the time available for work and leisure activities, T. This could occur by substituting time for goods in such non-market work activities as housework (see Becker (1965)). Thus, an increase in T will be accompanied by an increase in the earnings target and there will be almost no deviation from our analysis of a change in the earnings target alone. If only T changes, the discussion could proceed on similar lines as for a change in X. But there will be only few definite results concerning multiple jobholding. This is not surprising in view of the fact that T is assumed to be an ineffective constraint.

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